In the claims

Claims 30, 31, 32, 43 and 44 of remaining claims 30-48 are amended.

30. (Currently Amended) A method of making a horizontal magnetic head having an air bearing surface (ABS)[[,]] for facing a moving magnetic medium, comprising:

forming at least one coil layer and an insulation stack with the coil layer being embedded in the insulation stack;

forming said at least one coil layer with a filament which spirals in a plane which is parallel to said ABS[[;]] and about an axis which is perpendicular to the ABS;

forming first and second pole pieces with the insulation stack sandwiched between the first and second pole pieces;

forming the first pole piece with a first horizontal component which is partially bounded by first and second major planar thin film surfaces joined by a first edge surface with the first major planar thin film surface of the first horizontal component forming a portion of the ABS;

forming the second pole piece with a second horizontal component which is partially bounded by first and second major planar thin film surfaces joined by a second edge surface with the first major planar thin film surface of the second horizontal component forming a portion of the ABS;

forming the first and second edge surfaces with first and second surfaces which are perpendicular to the ABS and which are first and second thicknesses respectively of the first and second horizontal components respectively wherein the degree of each thickness is formed by sputtering or plating over a period of time;

forming a write gap layer between and interfacing the first and second surfaces of said first and second ~~edges;~~ edge surfaces;

forming a first shield layer having first and second major planar thin film surfaces joined by a third edge surface with the first major planar thin film surface of the first shield layer forming a portion of the ABS[[; and]] and having a greater surface area than a surface area of said third edge surface; and

forming a magnetoresistive (MR) sensor and first and second gap layers with the MR sensor sandwiched between the first and second gap layers and the first and second gap layers located between the third edge and the first horizontal component and with the MR sensor and the first and second gap layers forming portions of the ABS.

31. (Currently Amended) ~~A method as claimed in claim 30 comprising:~~ A method of making a horizontal magnetic head having an air bearing surface (ABS), comprising:

forming at least one coil layer and an insulation stack with the coil layer being embedded in the insulation stack;

forming said at least one coil layer with a filament which spirals in a plane which is parallel to said ABS;

forming first and second pole pieces with the insulation stack sandwiched between the first and second pole pieces;

forming the first pole piece with a first horizontal component which is partially bounded by first and second major planar thin film surfaces joined by a first edge with the first major planar thin film surface of the first horizontal component forming a portion of the ABS;

forming the second pole piece with a second horizontal component which is partially bounded by first and second major planar thin film surfaces joined by a second edge with the first major planar thin film surface of the second horizontal component forming a portion of the ABS;

forming a write gap layer between said first and second edges;

forming a first shield layer having first and second major planar thin film surfaces joined by a third edge with the first major planar thin film surface of the first shield layer forming a portion of the ABS;

forming a magnetoresistive (MR) sensor and first and second gap layers with the MR sensor sandwiched between the first and second gap layers and the first and second gap layers located between the third edge and the first horizontal component and with the MR sensor and the first and second gap layers forming portions of the ABS; and

forming an insulation layer between the MR sensor and the first pole piece.

32. (Currently Amended) A method as claimed in claim 30 comprising:

said forming of the first horizontal component forming the first horizontal component with a fourth edge surface which interfaces the second gap layer so that the first horizontal component serves as a second shield layer for the MR sensor.

33. (Previously Presented) A method as claimed in claim 30 comprising:

forming the MR sensor with an active region wherein the active region has a width which defines a read track width;

forming each of the first and second horizontal components with a width at said write gap layer which defines a write track width; and

aligning the widths of the active region and the first and second horizontal components.

34. (Previously Presented) A method as claimed in claim 30 comprising:

forming the MR sensor with only one elongated MR stripe which has a longitudinal axis with the longitudinal axis extending perpendicular to said ABS.

35. (Withdrawn) A method of making a horizontal magnetic head having a planar head surface for facing a moving magnetic medium, comprising the steps of:

forming at least one coil layer and an insulation stack with the coil layer being embedded in the insulation stack;

forming said at least one coil layer with a filament which extends about a central axis in a continuously receding fashion so as to form a spiral which lies in a pancake fashion in a coil plane which is parallel to said planar head surface and wherein the central axis is perpendicular to said planar head surface and said coil plane;

forming first and second pole pieces with the insulation stack sandwiched between the first and second pole pieces;

forming the first pole piece with a first horizontal component which is partially bounded by first and second major planar thin film surfaces joined by a first edge with the first major planar thin film surface of the first horizontal component forming a portion of the planar head surface;

forming the second pole piece with a second horizontal component which is partially bounded by first and second major planar thin film surfaces joined by a second edge with the first major planar thin film surface of the second horizontal component forming a portion of the planar head surface;

forming a write gap layer between said first and second edges;

forming a first shield layer having first and second major planar thin film surfaces joined by a third edge with the first major planar thin film surface of the first shield layer forming a portion of the planar head surface; and

forming a magnetoresistive (MR) sensor and first and second gap layers with the MR sensor sandwiched between the first and second gap layers and the first and second gap layers located between the third edge and the first horizontal component and with the MR sensor and the first and second gap layers forming portions of the planar head surface.

36. (Withdrawn) A method as claimed in claim 35 comprising:
forming an insulation layer between the MR sensor and the first pole piece.

37. (Withdrawn) A method as claimed in claim 35 comprising:
said forming of the first horizontal component forming the first horizontal component with a fourth edge which interfaces the second gap layer so that the first horizontal component serves as a second shield layer for the MR sensor.

38. (Withdrawn) A method as claimed in claim 35 comprising:
forming the MR sensor with an active region wherein the active region has a width which defines a read track width;
forming each of the first and second horizontal components with a width at said write gap layer which defines a write track width; and
aligning the widths of the active region and the first and second horizontal components.

39. (Withdrawn) A method as claimed in claim 35 comprising:
forming the MR sensor with only one elongated MR stripe which has a longitudinal axis with the longitudinal axis extending perpendicular to said planar head surface.

40. (Withdrawn) A method of making a horizontal magnetic head having a planar head surface, comprising the steps of:
forming at least one coil layer and an insulation stack with the coil layer being embedded in the insulation stack;
forming first and second pole pieces with the insulation stack sandwiched between the first and second pole pieces;
forming the first pole piece with a first horizontal component which is partially bounded by first and second major planar thin film surfaces joined by a first edge with the first major planar thin film surface of the first horizontal component forming a portion of the planar head surface;

forming the first pole piece with a first recessed horizontal component which is recessed from and extends parallel to the planar head surface;

forming the first pole piece with a slanted component which extends at an angle to the ABS and joins the first recessed horizontal component and the first horizontal component;

forming the second pole piece with a second horizontal component which is partially bounded by first and second major planar thin film surfaces joined by a second edge with the first major planar thin film surface of the second horizontal component forming a portion of the planar head surface;

forming a write gap layer between said first and second edges;

forming a first shield layer having first and second major planar thin film surfaces joined by a third edge with the first major planar thin film surface of the first shield layer forming a portion of the planar head surface;

forming a magnetoresistive (MR) sensor and first and second gap layers with the MR sensor sandwiched between the first and second gap layers and the first and second gap layers located between the third edge and the first horizontal component and with the MR sensor and the first and second gap layers forming portions of the planar head surface; and

forming an insulation layer between the MR sensor, the first and second gap layer, the first shield layer, the first horizonal component and the first recessed horizontal component so as to separate the MR sensor, the first and second gap layers, the first shield layer and the first horizontal component from the first recessed horizontal component.

41. (Withdrawn) A method as claimed in claim 40 comprising:

forming the MR sensor with an active region wherein the active region has a width which defines a read track width;

forming each of the first and second horizontal components with a width at said write gap layer which defines a write track width; and

aligning the widths of the active region and the first and second horizontal components.

42. (Withdrawn) A method as claimed in claim 41 comprising:

said forming of the first horizontal component forming the first horizontal component with a fourth edge which interfaces the second gap layer so that the first horizontal component serves as a second shield layer for the MR sensor;

forming the second pole piece with a second recessed horizontal component which is recessed from and extends parallel to the ABS; and

joining the second horizontal component to the second recessed horizontal component with the second major planar thin film surface of the second horizontal component overlapping and interfacing the first major planar thin film surface of the second recessed horizontal component.

43. (Currently Amended) A method of making a horizontal magnetic head having a flat planar head surface[[,]] for facing a moving magnetic medium comprising the steps of:

forming at least one coil layer and an insulation stack with the coil layer being embedded in the insulation stack;

forming said at least one coil layer with a filament which spirals in a flat coil plane which is parallel to said flat planar head surface and about a central axis which is perpendicular to said flat planar head surface and said flat coil plane;

forming first and second pole pieces with the insulation stack sandwiched between the first and second pole pieces;

forming the first pole piece with a first horizontal component which is partially bounded by spaced apart first and second major planar thin film surfaces which are parallel with respect to one another and which are joined by a first edge surface with a surface of the first major planar thin film surface of the first horizontal component forming a portion of the flat planar head surface;

forming the second pole piece with a second horizontal component which is partially bounded by spaced apart first and second major planar thin film surfaces which are parallel with respect to one another and which are joined by a second edge surface with the first major planar thin film surface of the second horizontal component forming a portion of the flat planar head surface;

forming the first and second edge surfaces with first and second surfaces which are perpendicular to the ABS and which are first and second thicknesses respectively of the first and second horizontal components respectively wherein the degree of each thickness is formed by sputtering or plating over a period of time;

forming a write gap layer between and interfacing a surface of each of said first and second ~~edges;~~ edge surfaces;

forming a first shield layer having first and second major planar thin film surfaces which are parallel with respect to one another and which are joined by a third edge surface with the first major planar thin film surface of the first shield layer forming a portion of the flat planar head surface; and

forming a magnetoresistive (MR) sensor and first and second gap layers with the MR sensor sandwiched between the first and second gap layers and the first and second gap layers located between the ~~third edge and the first horizontal component~~ first and third edge surfaces and with the MR sensor and the first and second gap layers forming portions of the flat planar head surface.

44. (Currently Amended) ~~A method as claimed in claim 43 comprising:~~ A method of making a horizontal magnetic head having a flat planar head surface, comprising the steps of:

forming at least one coil layer and an insulation stack with the coil layer being embedded in the insulation stack;

forming said at least one coil layer with a filament which spirals in a flat coil plane which is parallel to said flat planar head surface and about a central axis which is perpendicular to said flat planar head surface and said flat coil plane;

forming first and second pole pieces with the insulation stack sandwiched between the first and second pole pieces;

forming the first pole piece with a first horizontal component which is partially bounded by first and second major planar thin film surfaces joined by a first edge with the first major planar thin film surface of the first horizontal component forming a portion of the flat planar head surface;

forming the second pole piece with a second horizontal component which is partially bounded by first and second major planar thin film surfaces joined by a second edge with the first major planar thin film surface of the second horizontal component forming a portion of the flat planar head surface;

forming a write gap layer between said first and second edges;

forming a first shield layer having first and second major planar thin film surfaces joined by a third edge with the first major planar thin film surface of the first shield layer forming a portion of the flat planar head surface;

forming a magnetoresistive (MR) sensor and first and second gap layers with the MR sensor sandwiched between the first and second gap layers and the first and second gap layers located between the third edge and the first horizontal component and with the MR sensor and the first and second gap layers forming portions of the flat planar head surface;

forming the first pole piece with a first recessed horizontal component which is recessed from and extends parallel to the flat planar head surface;

forming the first pole piece with a slanted component which extends at an angle to the flat planar head surface and joins the first recessed horizontal component and the first horizontal component; and

forming an insulation layer between the MR sensor, the first and second gap layer, the first shield layer, the first horizonal component and the first recessed horizontal component so as to separate the MR sensor, the first and second gap layers, the first shield layer and the first horizontal component from the first recessed horizontal component.

45. (Previously Presented) A method as claimed in claim 44 comprising:

forming the MR sensor with an active region wherein the active region has a width which defines a read track width;

forming each of the first and second horizontal components with a width at said write gap layer which defines a write track width; and

aligning the widths of the active region and the first and second horizontal components.

46. (Previously Presented) A method as claimed in claim 45 comprising:

said forming of the first horizontal component forming the first horizontal component with a fourth edge which interfaces the second gap layer so that the first horizontal component serves as a second shield layer for the MR sensor;

forming the second pole piece with a recessed horizontal component which is recessed from and extends parallel to the flat planar head surface; and

joining the second horizontal component to the second recessed horizontal component with the second major planar thin film surface of the second horizontal component overlapping and interfacing the first major planar thin film surface of the second recessed horizontal component.

47. (Previously Presented) A method as claimed in claim 44 wherein as the filament spirals in said flat coil plane the filament continuously recedes from said central axis.

48. (Previously Presented) A method as claimed in claim 46 wherein as the filament spirals in said flat coil plane the filament continuously recedes from said central axis.